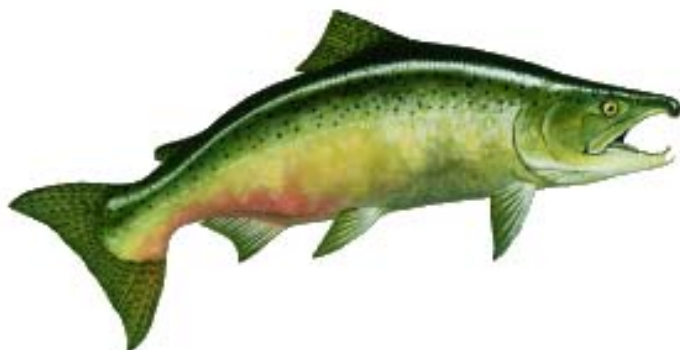


Hatchery Update

Carson National Fish Hatchery



Introduction

The U.S. Fish and Wildlife Service operates 12 National Fish Hatcheries (NFH) and one Fish Technology Center in the Columbia River basin. The Columbia River Fisheries Program Office (CRFPO) works with 6 of these facilities to evaluate release programs and conduct special studies. The CRFPO maintains the Service's hatchery database for these facilities as well.

About Carson National Fish Hatchery

The hatchery is located 13 miles northwest of Carson, in Skamania County, Washington. It is situated at the confluence of the Wind River and Tyee Springs. The facility began producing fall chinook salmon and resident trout in 1938. Early attempts to introduce spring chinook salmon into the Wind River between 1938 and 1940 met with little success. At that time, salmon could not return to the hatchery due to impassable Shipherd Falls, two miles upstream from the mouth of the Wind River. The hatchery was remodeled in 1956 under the Mitchell Act in order to establish a run of spring chinook salmon in the Wind River. At this time, a fish ladder was built at Shipherd Falls to allow salmon passage. Spring chinook salmon production began to take precedence over other production until 1976, when the last fall chinook salmon were released into the

Wind River. Carson NFH currently produces spring chinook salmon exclusively. Funding for the hatchery is through Mitchell Act funds, which are administered by the National Marine Fisheries Service.

Rearing facilities at Carson NFH include 46 raceways, two earthen rearing ponds, and two adult holding ponds. The main water source for the hatchery is Tyee Springs.

Hatchery Goal

Today the U.S. Fish and Wildlife Service operates Carson National Fish Hatchery to restore and maintain spring chinook salmon upstream of Bonneville Dam. This stock provides a popular sport and tribal fishery in the Wind River.

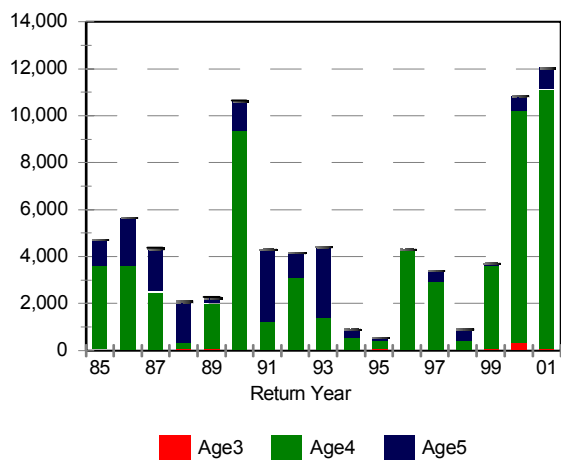
Hatchery Assessment

All hatcheries must consider their potential for adversely affecting the aquatic community. Wild steelhead in the Wind River are part of the Lower Columbia River population listed as threatened under the Endangered Species Act (ESA). To help us assess our impacts we plan to revise our Draft Hatchery and Genetic Management Plans for National Fish Hatcheries in the lower Columbia River, including Carson in 2002. These management plans are written to assess our program and meet ESA requirements. In addition to completing documentation to comply with our ESA responsibilities, we must also meet our mitigation responsibilities under the Mitchell Act as well as meet our Tribal Trust and U.S. v Oregon obligations. In order to balance these sometimes conflicting mandates, we regularly meet with our co-managers to discuss operation and management of the hatchery. More research is needed to assess the impacts of both hatchery releases and natural spawning chinook on steelhead in the Wind River. We are developing a Comprehensive Hatchery Management Plan which will also be available for review in 2002.

Adult Escapement Goal

A return of 1,200 adult salmon is needed to collect enough eggs for a full production of 1.42 million fish for onstation release.

Number and Age Composition of Returning Adults



We expect survival for brood years 1996 and 1997 to approach or exceed 1.0%.

Economic Benefit

A draft economic benefit analysis of returning Carson NFH spring chinook salmon was completed in 1999. The results of this study showed that for each \$1.00 spent, \$3.88 of economic activity was generated.

Sampling of Returning Fish

A proportion of returning adults are sampled at the hatchery for biological information. Sex and length are recorded and scales are collected so that age can be determined. Fish are also sampled for coded-wire tags. By using sample information and the number of returning fish, it is possible to calculate the number of returning fish for each age group and, consequently, the number of fish returning from each brood year or release year. On average, since 1985, 1% of Carson's spring chinook have returned as three year old male jacks, 75% as four year old adults, and 24% as five year old adults.

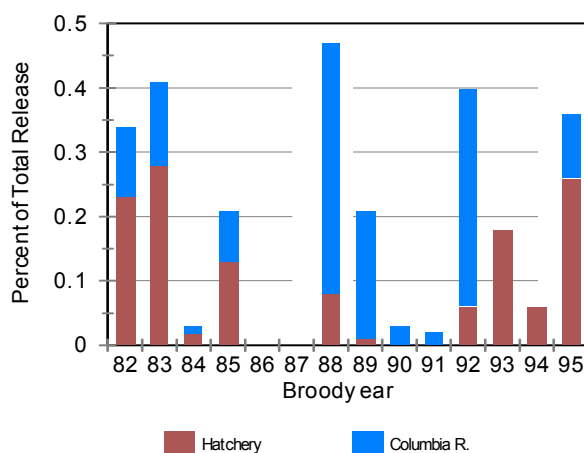
The number of fish returning from a hatchery release is influenced by early rearing at the hatchery, downstream migration, ocean conditions, and the harvest rate in the various fisheries.

Contribution

The coded-wire tag marking program has made it possible to determine total survival rates and contribution to fisheries. Since broodyear 1980, an average of 74% of adults return to the hatchery while remaining recoveries of Carson spring chinook salmon occur almost exclusively in the Columbia River. The majority of these fish are harvested in the fresh-water sport fishery, followed by tribal treaty and subsistence fishery, and Columbia River gill net fishery.

Survival for the Carson NFH spring chinook average 0.23% of the total number of fish released for the brood years 1982 through 1995. Total survival for broodyear 1995 was 0.36%.

Carson Spring Chinook Salmon Percent Recoveries



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